CLAIMS

1. A communication method for transmitting a multipath characteristic measurement signal and a plurality of data transmission signals,

wherein the multipath characteristic measurement signal and data transmission signals are a signal array formed by a plurality of coefficient matrices that are orthogonal to one another within the matrices and which comprise at least one coefficient array that is common in the column direction or row direction; and

the multipath characteristic measurement signal formed by the respective coefficient matrices is the same signal array formed by the one common coefficient array.

2. The communication method according to claim 1, wherein a multipath characteristic measurement signal array is formed by using one row vector or column vector coefficient array with respect to the multipath characteristic measurement signal, and, by forming a data transmission signal array by using a row vector coefficient array that is orthogonal to the row vector or a column vector coefficient array that is orthogonal to the column vector with respect to the plurality of data transmission signals, the transmitted multipath characteristic measurement signal and plurality of data transmission signals are uncorrelated.

3. The communication method according to claim 2, wherein the row vector or column vector is a row vector or column vector that a Hadamard matrix or unitary matrix comprises.

4. The communication method according to claim 2 or 3, wherein

the number of row vectors or column vectors used in the formation of the data transmission signal array is established on the basis of the received multipath characteristic measurement signals.

5. The communication method according to any one of claims 2 to 3, wherein the interval between the multipath characteristic measurement signals in the multipath characteristic measurement signal array and the interval between the data transmission signals in the data transmission signal array are changed on the basis of the received multipath characteristic measurement signals.

6. The communication method according to any one of claims 1 to 5, wherein an arbitrary user arbitrarily has a matched filter that corresponds with a coefficient array that is used in the formation of a transmission data array and receives an arbitrary data transmission signal via the matched filter.

7. A method of forming a transmission signal, comprising the steps of:

forming a matrix of an arbitrary length by selecting, from a plurality of orthogonal square matrices that comprise a common row vector or column vector, the common row vector or column vector and an arbitrary number of row vectors or column vectors that are orthogonal to the [common] row vector or column vector;

forming a multipath characteristic measurement signal array by multiplying each of the coefficient arrays of the common row vector or column vector by a multipath characteristic measurement signal;

forming a data transmission signal array by multiplying

each of the coefficient arrays of the other row vector or column vector in the matrix by each of the plurality of data transmission signals; and

rendering the multipath characteristic measurement signal array and data transmission signal array a transmission signal.

8. The method of forming a transmission signal according to claim 7, wherein the orthogonal square matrix is a Hadamard matrix or a unitary matrix.

9. The method of forming a transmission signal according to claim 7 or 8, wherein, when forming a multipath characteristic measurement signal array and a data transmission signal array by multiplying the respective row vector or column vector coefficient arrays by the multipath characteristic measurement signal and data transmission signal,

0 data of a predetermined length is added between the respective signals multiplied by the coefficient arrays and the interval between the multipath characteristic measurement signals in the multipath characteristic measurement signal array and the interval between the data transmission signals in the data transmission signal array are determined.

10. The communication method according to any one of claims 7 to 9, wherein the number of row vectors or column vectors used in the formation of the data transmission signal array is established on the basis of the received multipath characteristic measurement signals.

11. The method of forming a transmission signal according to claim 9, wherein the interval between the multipath characteristic measurement signals in the multipath characteristic measurement signal array and the interval between the data transmission signals in the data transmission signal array are changed on the basis of the received multipath characteristic measurement signals.

12. A transmission signal data structure formed by the method of forming a transmission signal according to any one of claims 6 to 11.